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MANAGING YOUR WOODLAND

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PACIFIC NORTHWEST REGION—STATE AND PRIVATE FORESTRY

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SELECTING A GOOD AREA FOR GROWING CHRISTMAS TREES IN THE PACIFIC NORTHWEST



THIS LAND CAN PRODUCE GOOD DOUGLAS-FIR CHRISTMAS TREES. NATURAL TREES ARE ABUNDANT, GROWTH IS MODERATE, TREE SHAPE IS SYMMETRICAL AND BUSHY AND LARGER TREES ARE AVAILABLE FOR SEED SOURCE.



THIS LAND IS MUCH BETTER ADAPTED TO GROW SAWTIMBER THAN DOUGLAS-FIR CHRISTMAS TREES. LONG LEADERS AND SPARSE BRANCHES INDICATE RAPID GROWTH. SPINDLY TREES CANNOT COMPETE ON THE MARKET WITH BUSHY TREES.

WHAT TYPE OF CHRISTMAS TREE FARM TO ESTABLISH?

Anyone planning to grow Christmas trees commercially should give careful thought to a proper choice of land, species and type of

operation to undertake. Three types of Christmas tree operations are found in the Pacific Northwest. These are described on the next page.



FOR FURTHER INFORMATION CONSULT YOUR LOCAL FORESTER



1. Natural Stands Unmanaged for Christmas Tree Production

These stands may produce Christmas trees from thinnings when 8 to 12 years old. Within a few years the trees grow beyond Christmas tree size. The primary purpose of this stand is future timber production. Christmas trees are only an incidental and temporary product. Compared with managed Christmas tree stands, production per acre is low and includes few trees of top quality.

2. Cultured Natural Christmas Tree Stands

Christmas trees may be developed from young natural stands by application of various cultural practices, such as weeding, thinning, pruning, scarring, shearing and stump culture. Details of various cultural practices are explained in other bulletins. Several older trees per acre are usually left to provide a natural seed supply. All other trees are cut when they reach Christmas tree size. Unstocked or poorly stocked spots are sometimes interplanted with seedlings to bring them into full production. Thus a continuous crop of Christmas trees is produced and harvested year after year.



3. Christmas Tree Plantations

These are established by planting seedlings for the purpose of growing Christmas trees. Cleared lands are generally preferred to stump or brush lands. Cultural practices such as pruning, scarring, shearing and stump culture may be applied to plantations the same as to cultured natural stands.



CHRISTMAS TREE PLANTATIONS ARE USUALLY ESTABLISHED ON CLEARED AGRICULTURAL LANDS. SHOWN ABOVE IS A NOBLE FIR PLANTATION. THIS SPECIES GROWS SLOWLY AND MAY BE PLANTED ON BETTER SOILS. FAST GROWERS, SUCH AS DOUGLAS-FIR AND SCOTCH PINE, SHOULD BE PLANTED ON SLOWER TREE-GROWING LANDS TO MAINTAIN A DESIRABLE LEADER GROWTH.

THIS CULTURED NATURAL CHRISTMAS TREE STAND HAS HAD BRUSH, HARDWOODS AND SURPLUS TREES REMOVED TO PROVIDE PLENTY OF GROWING SPACE. LOWER LIMBS HAVE BEEN PRUNED TO IMPROVE QUALITY AND PERMIT SUNLIGHT TO REACH THE SMALLER TREES NEAR THE GROUND.

Unmanaged natural stands, the first type described, are less productive and profitable than managed stands for growing Christmas trees. The decision usually lies between estab-

lishing either a cultured natural stand or a plantation. The following comparisons are made to help the grower decide which type is most practical and profitable for him.

Comparative Advantages

Cultured Natural Stands

1. Lower land costs.
2. Elimination or reduction of planting costs.
3. Shorter time before harvesting begins.

Plantations

1. Control over species of trees.
2. Better spacing.
3. Less brush and hardwood competition.
4. Usually less fire risk.

Comparative Production Statistics for Pacific Northwest in 1959

	<u>Wash.</u>	<u>Ore.</u>	<u>PNW Total</u>
Natural stands*	46%	89%	57%
Cultured natural stands	54%	9%	42%
Plantations	1% -	2%	1%
Number of trees cut	2,610,000	940,000	3,550,000

*Although natural unmanaged stands still provide the greatest number of Christmas trees in the Northwest, the demand is dropping off each year. The growing demand for cultured natural and plantation trees reflects the buyers' preference for higher quality trees.

ESTIMATED COSTS AND RETURNS FROM GROWING CHRISTMAS TREES

The tabulation on page 5 represents a hypothetical comparison of production costs and expected returns from two types of Douglas-fir Christmas tree farms--cultured natural and plantations. This table compares the production and interest costs to grow a crop of Christmas trees in

a ten-year period. On plantations we assume that there would be no income from the areas during the ten years and all of the trees would be harvested at the end of the ten-year period. On natural areas, part of the crop would be harvested during each of the ten years.

A lower purchase price is assumed for natural stocked areas since they are usually developed on cutover timber lands, while plantations are usually established on more valuable cleared agricultural lands. The natural areas are assumed to be stocked with an adequate number of trees so there is no planting cost. However, production of more trees per acre is assumed for the plantations since growing space is lost on natural areas due to the presence of seed trees, stumps, debris and unstocked spots. Protection costs are higher on natural areas due to greater amounts of flammable debris and usually more problems from livestock, deer and rodents. Higher stumpage values are allowed for plantation-grown trees because of lower anticipated harvesting costs.

A rate of 6% compound interest was assumed for all costs, including labor, for the period of investment. This represents a reasonable rate for invested capital whether the money is borrowed or the landowner's own savings are invested in the operation. Since the land can be sold at a future date, the land purchase price was not charged as a cost against the Christmas tree enterprise. However, the interest on the land cost was charged as a production cost.

It should be emphasized that most of the production costs are for labor. Most Christmas tree growers

would probably do this work themselves and consider the savings in costs as simply a part of their earnings in addition to profits. If it is assumed that the cost of labor is two-thirds of the production expense, then the grower could earn an additional \$152.70 per acre in 10 years on the cultured natural area and \$252 per acre on the plantation. Also, many growers would harvest their own trees rather than sell them on the stump. In this way, they could earn an additional 20 to 30 cents per tree or from about \$200 to \$300 per acre.

The analysis for both areas indicates that growing high-quality Christmas trees under intensive management can yield attractive rates of return over the relatively short investment period of ten years. Although the plantation shows a higher net income per acre than the cultured natural operation, it requires a greater capital investment.

Producing a crop of Christmas trees is only part of the job. In order to realize satisfactory investment returns, considerable business skill and experience is also necessary. Except in the South Puget Sound area, there are very few organized marketing channels for Christmas trees. In other areas, each grower must make his own contacts and arrangements for selling his trees. Successful marketing may make the difference between success and failure for the entire operation.

COMPARATIVE ANALYSIS
FOR TWO TYPES OF CHRISTMAS TREE OPERATIONS

	<u>Cost or Value per Acre</u>		
A. <u>Production Costs</u>	<u>Cultured</u>	<u>Natural</u>	<u>Plantation</u>
Land investment - - - - -	\$ 60.00		\$ 150.00
Taxes for 10 yrs. (assumed as 1% of land value per yr.) - - - - -	6.00		15.00
Initial treatment of natural stand - -	35.00		--
Planting, including ground preparation (1,500 seedlings and 200 replants) -	--		65.00
Annual culture, including shearing, for 9 years (\$12/yr.) - - - - -	108.00		108.00
Mowing and land cultivation for 10 yrs.	--		150.00
Protection against fire, trespass, rodents, insects, disease, livestock and game, (\$8 and \$4 annually for 10 yrs.) - -	80.00		40.00
Total investment	289.00		528.00
Less land value	-60.00		-150.00
Total	\$ 229.00		\$ 378.00
B. <u>Imputed Interest Charges at 6%</u>			
On land investment - - - - -	47.50		119.70
On taxes - - - - -	1.90		4.80
On initial planting or treatment costs	27.70		51.40
On annual cultural costs - - - - -	29.90		29.90
On plantation mowing and land cultivation costs - - - - -	--		47.70
On protection expenditures - - - - -	25.40		12.70
Total	\$ 132.40		\$ 266.20
Total cost including interest (A+B) - -	\$ 361.40		\$ 644.20
C. <u>Returns</u>			
Stumpage value:			
(1) 1,000 trees at average of \$.80/tree	800.00		
(2) 1,300 " " " " \$.90/tree			1,170.00
Production costs - - - - -	-229.00		- 378.00
Net cash returns, before taxes - - - -	571.00		792.00
Imputed interest, at 6% - - - - -	132.40		266.20
Net income for 10 years before taxes -	438.60		525.80
Average net income per year, before taxes	43.86		52.58

While the above figures are based on the best available estimates of costs and values, they are hypothetical examples and should not be considered or used as representative of any forest property. This table was prepared to show one simple method of making an economic analysis.

GENERAL CONSIDERATIONS

The safest bet is to acquire land in general areas where others have successfully grown Christmas trees. The local forester can be of valuable assistance in making a good selection.

Protection from livestock, deer, rodents, insects, disease and fire are important considerations. Necessary remedies may include fencing, rodent control, spraying, insecticides, ground preparation, snag falling and firebreaks. In some cases, particularly for cultured natural Christmas tree stands, protection costs may exceed the cost of the land. In any event, a wise buyer considers necessary protection as well as cultural costs when comparing land values.

The ideal location for a Christmas tree farm is on your home property where it can be conveniently protected and worked. Where this is not possible, it is desirable to establish the Christmas tree farm within working distance from home. Trespass problems can be reduced by selecting an area with controlled access, such as a private or gated road. Trespass signing and patrolling the area during the harvesting season may be necessary precautions. If a "choose-and-cut" operation is contemplated, it should be located reasonably close to population centers. It should also be provided with adequate roads, trails and parking space for customers.

Good access to the Christmas tree farm is a necessity. The finest producing area has little value without public road access or adequate right-of-way across private lands. Roads made impassable by mud or snow during the harvesting season present a similar problem.

Gently sloping or level lands have several advantages over steep ground. They are less susceptible to fire and erosion problems and are more easily worked by men and equipment. Construction and maintenance costs for roads and trails are relatively high on steep slopes.

Favorable location with respect to markets is important. Types of marketing outlets and distance to rail shipping points, concentration yards and retail outlets need careful study. Growers in established Christmas tree growing areas are in a better position to establish buyer contacts than those in isolated locations. Membership in a Christmas tree association will provide opportunities to meet other growers and dealers and to keep informed about new methods and procedures.

CONSIDERATIONS WHEN SELECTING LAND FOR CULTURED NATURAL CHRISTMAS TREES

Areas which are well stocked with natural trees of good Christmas tree quality are somewhat limited. Some considerations when looking for such areas are:

1. Areas with species which are in good market demand. Be certain that the area is well stocked with the proper Christmas tree species. The following tabulation indicates the production by species, in percent, for the 1959 Christmas season:

<u>Oregon</u>	<u>Western</u>	<u>Eastern</u>
Total Trees	630,000	310,000
Douglas-fir	77%	22%
Grand & concolor	11%	68%
Noble & Shasta red	6%	5%
Lodgepole & shore pines	5%	4%
Others	1%	1%
	100%	100%

Washington

Total Trees	<u>2,360,000</u>	<u>250,000</u>
Douglas-fir	96%	82%
Grand fir	1%	16%
Noble & silver	1%	-
Lodgepole pine	1%	1%
White pine	1%	-
Others	-	1%
	<u>100%</u>	<u>100%</u>

A person would not select an area which is stocked with western hemlock, Sitka spruce or western red cedar since the demand is very limited. Western hemlock and Sitka spruce, for example, have poor needle retention, while western red cedar is of limited acceptance as a Christmas tree.

2. Well stocked with young trees.

The ideal size is from 2 to 8 feet in height. Proper spacing between trees, about 5 feet by 5 feet, may be adjusted later by thinning.

3. Consider the growth rate. Pay

particular attention to natural trees which are now of Christmas tree height. Ideal growth rate is about 12 to 16 inches per year. This can be determined by measuring the length of the leader and the distance between branch whorls. Also notice tree fullness, branch stiffness, length and color of needles, freedom from disease and overall tree shape.

Good timber growing lands, which are evidenced by long leaders and sparse branching, should grow forest products other than Christmas trees. On the other hand, very poor timber growing lands, evidenced by spindly trees with weak limbs, thinly needled and of poor color, should be avoided.

4. Reasonably free of competing vegetation. Brush, hardwoods, unwanted conifers and tall weeds compete with Christmas trees for space, moisture and sunlight. Control measures for eliminating unwanted

species may exceed \$35 per acre. Follow-up treatment is often necessary.

5. Check the fire hazard. Natural Christmas tree areas should be relatively free of snags, down logs, and flashy fuels such as slash. Snag falling, piling and burning of slash, etc. are additional costs which should not be overlooked. Consider the hazards on adjoining properties and chances of fire from nearby centers of activity. A system of roads to all parts of the area is essential for moving in fire equipment quickly. It also serves as a firebreak and access for culturing and harvesting the Christmas trees.

CONSIDERATIONS WHEN SELECTING LAND FOR A CHRISTMAS TREE PLANTATION

Plantations are quite common throughout western Oregon and Washington. To a lesser extent, they have also been established east of the Cascade summit in areas where the natural moisture condition or irrigation permits tree growing.

Although Christmas tree plantations have been established for a number of years in the Eastern and Central States, they are relatively new in the Pacific Northwest. Most plantations have been established in the past 5 years. Seven to 12 years is usually required for planted nursery seedlings to grow to commercial Christmas tree size.

Favored sites for Christmas tree plantations are well-drained, cleared lands recently abandoned from cultivation. Old fields containing heavy sod or weed growth may also be planted, but the ground must first be properly prepared. This may be accomplished by summer fallowing or plowing and

planting to a light cover crop the year previous to tree planting.

Partially cleared lands are less desirable than completely cleared lands. Stumps, logs, debris and brush obstruct planting, cultivating and mowing. Some areas are unsuitable for plantations whether cleared or not. These include lands subject to flood, earth slides, erosion or poor drainage. It also includes land on which equipment cannot operate efficiently due to steep slope, shallow bedrock or numerous loose boulders. Proper air drainage is also important. Low spots or dips commonly referred to as "frost pockets" should be avoided.

Matching a planting area to the best adapted species is perhaps the most difficult decision for the Christmas tree grower. If he already owns land, he must first decide if his land is suitable for growing any kind of Christmas trees. If it is suitable, he must then decide what species will grow well on the land and be in demand at harvest time.

If the grower plans to purchase land, he has a great deal more latitude for decision. He should first decide what species are profitable, and secondly, the type of land that is best suited.

The growth rate comparisons shown below are intended only as a general guide for planting on lower elevations west of the Cascades. Growth rates of each species will

vary according to how well it is naturally adapted to the particular site on which it is planted. As an example, spruces tolerate moist, poorly drained sites better than pines and pines tolerate dry, exposed sites better than spruces. Also, the species shown as slow growers at lower elevations are not necessarily slow growing in their natural habitat.

Most growers prefer to plant fast-growing species on poorer, drier soils and slow-growing species on better, moister soils. If they desire to plant several different species, their safest choice is a compromise between the 2 extremes. A few growers prefer to plant fast-growing species on better agricultural lands, but they must control excessive growth by severe and frequent shearing.

Only trial and error will give the final answer as to which species will be best adapted to any planting site. However, the following procedures will help the grower make a decision.

1. Talk with experienced Christmas tree growers who own plantations where growing conditions are similar. Observe the growth rate and shape of various species in their plantations.
2. Consult with the local forester. If possible, go over the ground with him.

Rapid	Moderate	Slow
Douglas-fir	: Grand fir (<i>Abies grandis</i>)	: Noble fir
Scotch pine	: White fir (<i>Abies concolor</i>)	: Shasta red fir
Ponderosa pine	: Norway spruce	: Alpine fir
Lodgepole pine	: Austrian pine	: Silver fir
(Coast & interior)	:	: Colorado blue spruce
	:	:

3. Consider the relative advantages and disadvantages of lands that produce fast tree growth versus lands that produce slow tree growth. These are summarized below.

Type of Land	Advantages	Disadvantages
<u>Lands Producing Fast Growth</u> Characterized by one or more of the following conditions: a. Adequate moisture for fast growth. b. Deep, well-drained soils. c. Not exposed to severe climatic influences such as: dry exposures, severe winds and frost pockets. d. Usually good agricultural lands.	1. Slow-growing species produce an adequate rate of growth. 2. Needles have heavy density and good color. 3. Damage and mortality from drought is relatively light. 4. Soil usually tills well.	1. Fast-growing species produce an excessive rate of growth. 2. Trees are costly to ship due to heavy branches and stems. 3. Intensive shearing and other cultural practices are required. 4. Rank growth of grass and weeds competes with the trees and furnishes a habitat for rodents. 5. Land costs are high.
<u>Lands Producing Slow Growth</u> Characterized by one or more of the following conditions: a. Insufficient moisture for fast growth, especially during the critical summer months. b. Shallow or poorly drained soils. c. Exposed to severe climatic influences such as: dry exposures, severe winds and frost pockets. d. Usually poor agricultural lands.	1. Growth of fast-growing species is sufficiently retarded. 2. Trees are easy to ship due to light branches and stems. 3. Minimum shearing and other cultural practices are needed. 4. Grass and weed competition is comparatively light. 5. Land costs are low.	1. Slow-growing species grow too slowly. Longer rotations are required to produce trees of marketable size. 2. Lighter density trees are produced that sometimes lack vigor and good color. 3. Damage and mortality from drought is relatively high. 4. Soil is sometimes difficult to till.
<u>Lands Producing Intermediate Growth</u>	This type of land lies between the two extremes. It is suitable for the widest range of species. However, fast growing species may require intensive pruning and shearing to control excessive growth, and slow growing species may not grow quite as fast as desired.	

DETERMINATION OF
SIZE OF CHRISTMAS TREE FARM
TO ESTABLISH

Some growers operate large Christmas tree areas as a full-time business. More often Christmas tree growing is a part-time occupation for farmers and other woodland owners from various walks of life. Three or 4 years is normally required to bring a cultured natural stand into full scale production. Even longer--about 7 to 12 years--is required to grow planted seedlings to Christmas tree size. Inexperienced growers should, therefore, feel their way gradually into the business and retain their regular sources of income. In order to gross \$8,000 annually from land that can produce 100 trees per acre per year valued at \$1 each, a grower would need to have 80 acres in continuous production. Needless to say, keeping this much land in full production with top quality cultured trees requires a great deal of hard work, know-how and investment. It also involves a risk from fire, disease and other hazards.

Eighty acres is about as large an acreage of cultured natural trees as one man can culture and intensively manage without hiring help, except during the cutting season. Growers of plantation Christmas trees should normally plan to work smaller areas than growers of cultured natural Christmas trees. Plantations usually produce more trees per acre and require additional work such as cultivating and mowing to control grass and weeds. Growers who plan to grow Christmas trees on a part-

time or week-end basis should develop proportionately smaller areas than full-time growers.

SOURCES OF INFORMATION AND ASSISTANCE

Reference material is available from the County Extension Agent. He can also advise growers concerning the availability of assistance from farm foresters, Extension foresters, soil technicians or others who can evaluate the suitability of lands for growing various species of Christmas trees.

Services of a farm forester are available to most woodland areas in Oregon and Washington. The office address of the local farm forester can be obtained by inquiring at any State District Warden's office in Oregon or State Department of Natural Resources Office in Washington.

Additional sources of information on selection of lands for growing Christmas trees are:

Local offices of the Soil
Conservation Service

U.S. Forest Service, P.O.Box 4137,
Portland 8, Oregon

Northwest Christmas Tree Association.
The name and address of the current secretary may be obtained by contacting a farm forester or writing to the U. S. Forest Service at the above address.

SUMMING UP

The production of good quality Christmas trees is a business that requires a great deal of know-how and hard work. Even then, it can succeed only on land capable of producing quality trees.

The first decision a grower must make is whether to culture a natural stand of small trees or establish a plantation. His second decision is what species of Christmas trees to grow. Finally, he must select an area that is suitable for the chosen type of operation. Important considerations are site topography, existing vegetation, accessibility, markets, required acreage, nearness to home and problems of fire protection, disease, insects and trespass.

It will pay the grower to consult many sources for Christmas tree information before selecting his land. He should obtain advice from a forester, visit a number of successful Christmas tree farms and obtain available literature.

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